

Applications of the Navy's Globally Relocatable Tide Model (PCTides)

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The Naval Research Laboratory has developed a globally relocatable tide/surge forecast system referred to as PCTides. The system uses a 2-dimensional barotropic ocean model to predict tidal elevation, storm surge and barotropic ocean currents. Global databases included in the system are a 2-minute bathymetry, global boundary conditions and global tide stations. Surface winds and pressures from the Navy's global and regional atmospheric forecast systems force the model.

PCTides output includes timeseries of tidal height deviations and ocean currents at each grid point of the model and at higher frequency (usually 10-12 minutes) at specified point locations.

PCTides has successfully completed its Navy operational evaluation by comparing forecasts along US coastal regions to real-time observations from the National Oceanic and Atmospheric Administration (NOAA) tide gauges. Based on comments from the operational evaluation, several improvements were incorporated into the system. In addition to its operational evaluation, PCTides has been run in a number of other locations where both tidal heights and currents were compared to observation.

Specific examples of PCTides forecasts for various areas and improvements to the system will be presented.